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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/660,309 09/12/00 ZHU

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EXAMINER

HA, N

ART UNIT

PAPER NUMBER

2831

DATE MAILED:

06/05/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

## Office Action Summary

Application No.

09/660,309

Applicant(s)

ZHU ET AL.

Examiner

Nguyen T Ha

Art Unit

2831

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

### Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Mueller et al (6,097,263).

Regarding claim 1, Mueller discloses a varactor shown in figure 16 comprising a substrate (512), a first conductor (504a) positioned on a surface of the substrate, a second conductor (504b) positioned on the surface of the substrate forming a gap (516) between the first and second conductors, a tunable dielectric material (508) positioned on the surface of the substrate and within the gap, the tunable dielectric material having a top surface, at least a portion of the top surface being positioned above the gap opposite the surface of the substrate (figure 16), and a first portion of the second conductor extending along at least a portion of the top surface of the tunable dielectric material (shown in figure 16).

Regarding claim 2, Mueller discloses a varactor wherein a portion of the tunable dielectric material lies along a surface of the first conductor opposite the surface of the substrate (shown in figure 1).

Regarding claim 3, Mueller discloses a varactor wherein the first portion of the second conductor has a rectangular shape (shown in figure 16).

Regarding claims 4&11, Mueller discloses a varactor wherein the tunable dielectric layer comprising  $\text{LiTaO}_3$  (column 14 lines 57-60).

Regarding claims 5,8, and 13, Mueller discloses a varactor wherein the substrate comprising  $\text{Al}_2\text{O}_3$  (column 10 lines 50-51).

Regarding claims 6,9, and 10, Mueller discloses a varactor wherein the first portion of the second conductor overlaps a portion of the first conductor (column 11 lines 34-35).

Regarding claims 7&12, Mueller discloses a varactor wherein the tunable dielectric layer comprising a barium strontium titanate ( $\text{BSTO-CaTiO}_3$ ) (column 3 lines 41-45).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller et al (6,097,263) in view of Rutt et al (3,879,645).

Regarding claims 14-16, Mueller discloses all the limitations recited to claim 1, except for the first conductor comprising one of: platinum, platinum-rhodium, and ruthenium oxide, and second conductor comprising one of: gold, silver, copper, platinum, and ruthenium oxide. However, Rutt teaches the conductors comprising platinum (column 10 lines 8-13) and silver (column 14 lines 49-56). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Mueller as taught by Rutt to have conductors made of platinum and silver because these materials have high conductivity for the varactor.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nguyen T Ha whose telephone number is 703-308-6023. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 703-308-3682. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3432 for regular communications and 703-305-3431 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

NH

May 2, 2001

*Dean A. Beuchamp* 5/7/01  
[Faint, illegible text]